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10/015,092	12/11/2001	Laurence W. Davies	26998-241836	7674

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EXAMINER

YAO, SAMCHUAN CUA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/015,092	Applicant(s) DAVIES ET AL.	
	Examiner Sam Chuan C. Yao	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) 55-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 and 50-54 is/are rejected.
- 7) ☒ Claim(s) 39-49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/2/03, 1/5/04, 4/2/04</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Objections

1. Claims 21-29 are objected to because of the following informalities:
replace "permeably" recited in the claims with --permeable--. Appropriate correction is required.

Claim Rejections - 35 USC § 102/103

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-15, 18-31, 34-36, 52-53 and 64 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rau et al (US 4,752,513).

With respect to claims 1-3, 14, 20, 52-53 and 64, Rau discloses a process of making a pultruded composite, the process comprises:

- a) orienting an array of continuous strands along an axial direction of a pultrusion die;
- b) providing a pair of permeable reinforcing structures, each comprising an underlying fiber (taken to be staple fibers) mat (62) and a plurality of overlapping continuous strand layers (4-7; reinforcing fibers), each strand layer being deposited transversely from the axial direction, wherein the underlying fiber mat and the strand layers are simultaneously perforated and bonded/entangled together by a needling operation, thereby forming a permeable reinforcing structure (64)
- c) impregnating the oriented continuous strands and the reinforcing structures by immersing each of them into a resin bath;
- d) folding each of the reinforcing structures to generally conform with a profile of the pultrusion die;
- e) feeding the oriented continuous strand into the pultrusion die;
- f) disposing and combining the oriented continuous strands between the folded pair of reinforcing structures in the pultrusion die;
- g) curing the resin the pultrusion die to form a pultruded composite; and,
- h) pulling the pultruded composite from the pultrusion die (col. 1 lines 32-37; col. 3 lines 4-68; col. 5 line 44 to col. 6 line 63). Although not explicitly disclosed, in view of the similarity of the production processes (i.e. all layers are immersed in a resin, before being combined in a pultrusion die) between the process taught by Rau et al and the present invention, the

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resin must inherently substantially surround the oriented continuous strands and the pair of reinforcing structures. Moreover, although not expressly disclosed, since the transversely deposited strands comprises several layers as compared to a single fiber mat, the transversely deposited strand layers must inherently comprise *"at least 40% [50%] of a volume of materials comprising the reinforcing structure"* (terms inserted).

Note further: Where ... the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. **Whether the rejection is based on "inherency" under 35 USC § 102, on prima facie obviousness" under 35 USC § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products."** In re Best, 562 F2d 1252, 1255, 195 USPQ 430, 433-4 (CCPA 1977).

In any event, absent any showing of unexpected benefit, it is taken to be well within the purview in the art to determine a suitable relative volume between a fiber mat and transversely deposited strand layers in forming a reinforcing structure of Rau et al. It is worthnoting that, Rau et al teaches using a fiber mat manufactured by DuPont (REMay®) see column 8 lines 7-11, this mat appears to be at least gas-permeable.

With respect to claims 4-5, since Rau et al is not restrictive to a particular fiber dimension in forming a fiber mat as evidence from the following passage: *"In producing mats of glass fibers, the fiber size can range widely ..."* (col. 3 lines 27-36); and since the recited fiber dimension is

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conventional in the art of making a fiber mat; these claims would have been obvious in the art.

With respect to claims 6-7, since a fiber mat having the recited weight basis is well known in the art, these claims would have been obvious in the art.

With respect to claims 8-12 and 15, see column 3 lines 50-52. It is a common practice in the art to use bicomponent fibers, each having reinforcing/loading core and thermo-binding shell such that, the difference in glass transition or softening temperature is significantly different so that, the reinforcing/loading core are not adversely affected during a thermo-activation of the thermo-binding shell. Moreover, polymeric fibers having the recited glass transition temperatures are well known in the art.

Furthermore, as the thermo-binding fibers are melted, the fiber mat must inherently be thermally bonded to the transversely deposited strands. For these reasons, these claims would have been obvious in the art.

With respect to claim 13, although not explicitly disclosed, the reinforcing structure of Rau et al has substantially in-plane mechanical and direction stability, because a reinforcing fiber mat is not only needed to a transversely overlapping layers of continuous strand, but they are also stitched together.

With respect to claim 18-19, see column 4 lines 11-27. The recited latex binders in claim 19 are taken to be conventional in the art.

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With respect to claims 21-29, the recited permeability (depends significantly on a number of needles per unit area), stiffness, thickness, and tensile strength are all taken to be well within the purview of choice in the art. One in the art would have determined, by routine experimentation, a workable fiber mat characteristic for its intended application.

With respect to claims 30-31, see column 3 lines 1-8 and column 5 lines 44-53.

With respect to claims 34-36, see column 5 lines 54-67, especially US patent 4,340,406 cited by Rau et al.

5. Claims 16-17 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al (US 4,752,513) as applied to claim 1 above, and further in view of Smith (US 3,761,345).

It would have been obvious in the art to replace a reinforcing structure taught by Rau et al with a reinforcing structure taught by Smith, because:

- a) Rau et al discloses providing a reinforcing structure having characteristics that would form a pultruded article which has “a *substantially uniform reinforcement throughout and tensile properties in all direction that are adequate for the intended use*” (col. 1 lines 44-65); and,
- b) Smith teaches forming “an *improved reinforcement structure*” having a similar configuration as Rau (i.e. fiber mat and transversely deposited layers of strands are needled together), accordingly, the reinforcing structure has “*improved multidirectional strength characteristics*” and

"improved conformability and better resin absorption characteristics", so that a resultant reinforced article has *"improved strength"* (col. 2 lines 3-15). It directly follows that, in view that, the reinforcement structure of Smith comprises a fiber mat and overlapping oriented layers of strands which are stitched together using unstretched polyester filaments after being needled (col. 6 lines 25-42; col. 10 lines 9-60; figure 15), claims 16-17 would have been obvious in the art.

With respect to claim 38, see figures 1 and 10-11 of the Smith patent, for example.

6. Claims 32-33, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al (US 4,752,513) as applied to claim 1 above, and further in view of Dana et al (US 5,908,689).

With respect to claims 32-33, the recited organosilane agent is a conventional coupling agent in the art. It is a common practice to apply an organosilane coupling agent to a fiberglass reinforcing structure as exemplified in the teachings of Dana et al (col. 6 lines 41-55).

With respect to claim 37, since Dana et al teaches forming a needled reinforcing structure comprising an alternating layers of fiber mat ply and a plurality of overlapping continuous strand plies which are deposited transversely from the axial direction, wherein the reinforcing structure can be used in a pultrusion process, this claim would have been obvious in the art.

7. Claims 50-51 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al (US 4,752,513) as applied to claim 1 above, and further in view of Beer et al (US 5,910,458).

Since it is old in the art to pultrude a reinforcing composite which comprises alternating layers of needled reinforcing structure and a longitudinal rovings as taught example by Beer et al (col. 19 lines 12-17; figures 1, 3 and 8), these claims would have been obvious in the art.

Allowable Subject Matter

8. Claims 39-49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: for the same reason set forth in a prior office action.

Response to Arguments

10. Applicant's arguments filed 05-06-04 have been fully considered but they are not persuasive.

On page 11, Counsel argues that, the mats of Rau are constructed from randomly oriented fibers. To support Counsel's assertion, Counsel cited a passage in column 2 lines 10-14, where it states "... *Both mats are characterized by having the fibers randomly distributed throughout the mat.*". This cited passage does not change fact that, a strand mat taught by Rau et al is clearly formed by moving strands 4,5,6 and 7 "*back and forth across the conveyor*

surface transverse to the path of travel" (col. 5 lines 54-63; figure 5). As for the passage cited by Counsel, it could be possible that, it is referring to entangled fibers resulting from a needling operation illustrated in figure 5. In that figure, it shows transversely oriented strands overlaying a fiber mat are needled together. It should be strongly emphasized that, however, after performing the needling operation, the overall orientation of the strands is not expected to change substantially. In other words, the strands are expected to substantially retain their overall transverse orientation relative to a machine direction. As for Counsel's argument on page 11 full paragraph 4 regarding the relative orientation of first reinforcing fibers, it is respectfully submitted that counsel's argument is commensurate in scope of claim 1. Claim 1 as presently recited does not require orienting first reinforcing fibers in a direction perpendicular to an axial direction, +/- 20 degree or +/- 30 degree.

As for Counsel's argument on the same page last paragraph that, the *"permeable transport web provides sufficient structural integrity that the generally transverse reinforcing fibers maintain their transverse orientation even when subjected to the pulling forces encountered during pultrusion."* It is respectfully submitted that, Counsel's argument is not commensurate with the scope of the recited claims. None of the recited claims appears to require using a permeable transport web, which is intended to provide sufficient structural integrity; much less requires maintaining transverse orientation of reinforcing fibers when a resultant reinforcing structure is subjected to a pultrusion operation.

As for Counsel's argument on page 12 full paragraph 2 regarding Dana et al using a mat having a randomly oriented fibers, it would appear that counsel is resorting to a piecemeal analysis of the applied references. What is critical on the issue of patentability under 35 U.S.C. 103(a) is "what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all the relevant teachings in the art, not in view of the first one and then another of the isolated teachings in the art." In re Kuderna, 165 USPQ 575 (CCPA 1970). In the present case, Dana et al is used as a secondary reference. This secondary patent is merely cited to show that it is old in the art to apply an organosilane coupling agent to a fiberglass reinforcing structure. As for a limitation of providing transversely oriented reinforcing fibers, such is taught by Rau et al as noted above (see figure 5 and column 5 lines 54-60). Similarly, it should be emphasized that, Beer et al is a secondary reference. Moreover, once again, contrary to Counsel's assertion, Rau teaches providing transversely oriented reinforcing fibers.

Information Disclosure Statement

The references cited by Applicant on the 1449's have been made of record. While the statements filed clearly do not comply with the guidelines set forth in MPEP 2004 regarding both the number of references cited and elimination of clearly irrelecant art and marginally pertinent cumulative information, compliance with these guidelines is not mandatory. Furthermore, 37 CFR 1.97 and 1.98 do not require that the information be material, rather they allow for submission of

information regardless of its pertinence to the claimed invention. Also, there is no requirement to explain the materiality of submitted references, however, the cloaking of a clearly relevant reference by inclusion in a long list of citations may not comply with Applicant's duty of disclosure, see *Penn Yan Boats, Inc. v. Sea Lark Boats Inc.*, 359 F. Supp. 948, aff'd 479 F. 2d. 1338.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Chuan C. Yao whose telephone number is (571) 272-1224. The examiner can normally be reached on Monday-Friday with second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sam Chuan C. Yao
Primary Examiner
Art Unit 1733

Scy
06-25-04